Appendix H

Methodology Notes

Throughout this report, various references are made to state and local population data used to calculate the Disparity Indexes (DIs) for different racial and ethnic groups involved in traffic stops. Additionally, stop DIs for individual agencies are calculated differently from DIs calculated for geographic regions such as a VSP Division or a "local area" such as those depicted in map Figures 6–8 and Figures 14–16. This appendix provides an explanation of the population data used and the DI calculations for geographic regions made in this report.

Census Data used to Calculate Traffic Stop Disparity Indexes

Data Source: National Center for Health Statistics. Vintage 2019 post-census estimates of the resident population of the United States (April 1, 2010, July 1, 2010–July 1, 2019), by year, county, single-year of age (0, 1, 2... 85 years and over), bridged race, Hispanic origin, and sex. Prepared under a collaborative arrangement with the U.S. Census Bureau. Available from: www.cdc.gov/nchs/nvss/bridged_race.htm as of July 9 2020.

The National Center for Health Statistics (NCHS) bridged-race population estimates for counties and cities are currently the only U.S. Census-based population estimates available by both single year of age *and* the 4–race groups and 1–ethnicity collected in the Virginia traffic stop data. Single year of age was needed to calculate populations age 15 and older by race and ethnicity; these are in turn used to calculate driver stop DIs. Bridged-race population estimates for calendar year 2019 were used because they were the most recent available as this report was being prepared.

The NCHS bridged-race population estimates are based on inter-census estimates produced by the U.S. Census Bureau. Census produces population estimates for Virginia counties alone as well as an *aggregated* population estimate for Virginia counties that includes the population of towns located within the geographic boundary of the county (if a county has no towns located within its borders, then the county population alone is equal to the aggregated county population). The *aggregated* county population estimate serves as the basis for the bridged-race county population estimates produced by NCHS. NCHS does not produce bridged-race population estimates by age–race–ethnicity for Virginia towns, so there is no way to subtract town age–race–ethnicity population from the aggregated county age–race–ethnicity population data. This means that the population used to calculate stop DIs for some Virginia county agencies includes town populations.

Disparity Index Calculations for Virginia State Police Maps with Stops, Searches, and Driver Arrests by Driver Race

VSP stop DIs were calculated using the formula described in section *Statewide Disparity Index (DI):*

$$\frac{\text{Group's percentage of all stops reported by VSP statewide}}{\text{Group's percentage of population age 15+ statewide}}$$

The group's percentage of all stops reported is the percentage of driver stops for individuals age 15 and older by race or ethnicity as reported statewide by VSP.

The group's percentage of population age 15+ is the total population age 15 and older statewide by race or ethnicity statewide.

It should be noted that the VSP statewide traffic stop DIs may be subject to more variability than traffic stop DIs calculated for local LEAs. This is because VSP often patrols interstate highways, which are more likely to be traveled by transient, out-of-state drivers, who are not included in the Virginia population age 15+ used in the calculation.

Disparity Index Calculations for Local Area Maps with Stops, Searches, and Driver Arrests by Driver Race for Local Law Enforcement Agencies

Local area DIs were calculated using the *sum* of stops (or the sum of stop details like searches or driver arrests) submitted by all city, county, or town agencies that reported traffic stops within the geographic boundary of the city or county.

For example, if both a PD and SO reported stops within City X, the total number of stops (or searches or driver arrests) from both agencies along with the City X bridged-race population age 15+ were used to compute the local area DI for City X.

Similarly, if a SO and two town PDs reported stops (or searches or driver arrests) within the geographic boundary of County Y, the total reported by all three agencies along with the County Y bridged race population age 15+ (which includes the population for the towns) were as used to compute the local area DI for County Y.

Once the total number of stops is determined for a local area, the DI is calculated using the formula described in section *Statewide Disparity Index (DI):*

$$\frac{\text{Group's percentage of all stops reported for the local area}}{\text{Group's percentage of population age 15+ for the local area}}$$

Similarly, once the total number of searches or driver arrests is determined for a local area, the DI is calculated using the formula described in section *Statewide Disparity Index (DI):*

$$\frac{\text{Percent of drivers in each group for searches or driver arrests for the local area}}{\text{Group's percentage of all stops reported for the local area}}$$